IN THE CLAIMS

Please cancel Claims 27-33 and 42-45 without prejudice, and add new Claims 51-55 as follows:

1.-14. (Cancelled)

15. (Previously presented) A probe for autonomously operating within the intestinal tract of a living organism, comprising:

at least one sensor capable of collecting information relating to said organism;

a data processor; and

a communications device;

wherein said data processor and said communications device comprises a single semi-conductive die.

16. (Previously presented) The probe of Claim 15, wherein said data processor comprises at least a processor core optimized for reduced power consumption.

17. (Previously presented) The probe of Claim 16, wherein said at least processor core includes at least one sleep mode.

18. (Previously presented) The probe of Claim 17, wherein said at least one sleep mode is adapted to selectively place portions of said at least processor core in a state of reduced power consumption.

19. (Previously presented) The probe of Claim 17, wherein said at least one sleep mode is entered or exited via at least one signal generated external to said probe.

20. (Previously presented) The probe of Claim 15, wherein said core comprises at least one instruction, said at least one instruction being adapted to perform at least one mathematical operation.

21. (Previously presented) The probe of Claim 20, wherein said at least one mathematical operation comprises a fast-fourier transform (FFT).

22. (Previously presented) The probe of Claim 20, wherein said at least one mathematical operation comprises a butterfly calculation.

23. (Previously presented) The probe of Claim 20, wherein said at least one mathematical operation comprises a calculation in support of error correction.

24. (Previously presented) The probe of Claim 15, wherein said communications device comprises at least a portion of a direct sequence spread spectrum (DSSS) transceiver.

25. (Previously presented) The probe of Claim 15, wherein said communications device comprises at least a portion of a frequency hopping spread spectrum (FHSS) transceiver.

26. (Previously presented) The probe of Claim 15, wherein said communications device comprises at least a portion of a time-modulated ultra-wide bandwidth (TM-UWB) transceiver.

27.- 33. (Cancelled)

34. (Previously presented) A probe for autonomously operating within the intestinal tract of a living organism, comprising:

at least one sensor capable of collecting information related to said organism;

a data processor adapted to process at least a portion of said information to produce data; and

a spread spectrum communications device adapted to transfer at least a portion of said data or said information off-probe.

35. (Previously presented) A probe for autonomously operating within the intestinal tract of a living organism and adapted for use in a multi-probe environment, comprising:

at least one sensor capable of collecting information relating to said organism;

a data processor adapted to process at least a portion of said information to produce data; and

a communications device adapted to transfer at least a portion of said data or said information off-probe, said communications device further being adapted to minimize interference with other communications devices operated proximate said probe.

36. (Previously presented) The probe of Claim 35, wherein said communications device comprises a spread-spectrum transceiver having a substantially unique spreading code.

37. (Previously presented) The probe of Claim 35, wherein said communications device operates in the ISM band.

38. (Previously presented) A probe for autonomously operating within the intestinal tract of a living organism, comprising:

at least one sensor capable of collecting information relating to said organism; and

a data processor adapted to process at least a portion of said information;

wherein said data processor is optimized for both die size and power consumption.

39. (Previously presented) A substantially autonomous intestinal device manufactured by the process comprising:

providing a sensor for said intestinal device, said sensor being capable of generating data;

generating a design for an integrated circuit useful with said device, said design adapted to optimize the processing of said sensor data;

converting said design to an integrated circuit; and

incorporating said integrated circuit within said probe, said integrated circuit being in operative communication with said sensor.

40. (Previously presented) A substantially autonomous intestinal device manufactured by the process comprising:

providing a sensor for said intestinal device, said sensor being capable of generating data;

providing a communications interface for transferring data;

generating a design for an integrated circuit useful with said device, said design having a processor core associated therewith, said design being adapted to integrate said processor core and at least a portion of said communications interface onto a single semi-conductive die;

fabricating said semi-conductive die having said integrated circuit; and

incorporating said die within said probe.

41. (Previously presented) The intestinal device of Claim 40, wherein said act of generating further comprises optimizing the power consumption of said die by incorporating at least one extension instruction within said core.

42. – 45. (Cancelled)

46. (Previously presented) An autonomous intestinal probe having at least one image sensor and a data processor operatively coupled thereto, said data processor comprising at least one instruction optimized for processing of data from said at least one image sensor.

47. (Previously presented) The probe of Claim 46, wherein said at least one instruction comprises an FFT instruction.

48. (Previously presented) The probe of Claim 46, wherein said at least one instruction comprises an instruction adapted to perform error correction.

49. (Previously presented) The probe of Claim 46, wherein said at least one instruction comprises an instruction adapted to perform image compression.

50. (Previously presented) An autonomous intestinal probe having a sensor, communications interface, and a data processor operatively coupled to both said sensor and said interface, said data processor comprising at least one instruction optimized for processing data from said at least one image sensor for transmission over said at least one interface.

51. (New) The probe of Claim 15, wherein at least said data processor comprises an integrated circuit design specifically adapted to meet at least one power consumption criterion and at least one die size criterion associated with said probe.

52. (New) The probe of Claim 16, wherein said optimization of the power consumption of said processor core is accomplished by:

selecting a sensor configuration for said sensor;

selecting a communications configuration for said probe to be used by said communications device; and

selecting a processor configuration for said probe which optimizes the power consumption of at least one of said sensor configuration and said communications configuration.

53. (New) The probe of Claim 52, wherein said act of selecting a processor configuration comprises providing at least one customized extension instruction, said at least one instruction being adapted to perform at least one function associated with said sensor configuration and/or said communications configuration with a reduced number of processor cycles.

54. (New) The method of Claim 53, wherein said at least one function comprises multiply-accumulate (MAC) operations.

55. (New) The method of Claim 53, wherein said at least one function comprises image data compression.